

T2-00001

Application Number: T2-00001

Scientific Score: 68

Title: Training Stem Cell Researchers at the Chemistry-Biology Interface

Specific names of individuals and institutions are blacked out to preserve applicant confidentiality where possible.

Proposal Abstract as Submitted by Applicant

We will exploit the unique strengths of [REDACTED] in Chemistry and Biology to provide an interdisciplinary stem cell training program that incorporates teaching and research in chemistry, functional genomics, and molecular genetics. The goal of this proposal is to train scientists for future careers in basic or applied research in the field of stem cell biology. In particular, the aim of this program is to train coworkers who can work at the interface of chemistry and biology in order to more effectively apply chemical tools and approaches to basic research and the development of new therapeutic approaches in regenerative medicine. This requires a training program that brings together graduate students and postdoctoral fellows from the biology and chemistry disciplines in order to (1) educate them in the basic biology, methods, and applications in embryonic and adult stem cell biology; (2) cross train them in the principles and approaches that chemists and biologists apply to biological problems; (3) foster research collaborations between chemists and biologists in the stem cell field; and (4) stimulate an awareness of the problems and ethical issues associated with basic and applied stem cell research. This training program, although relatively small in size, will benefit from close interactions with the broader [REDACTED] stem cell community [REDACTED] including collaborative research projects and joint seminar programs, classes, and workshops. We are requesting a Type II program with support for 10 trainees to be educated at [REDACTED].

Benefit of this Program to California

This program will benefit the people and the state of California by providing high-quality training in the scientific, clinical, social, and ethical aspects of stem cell research to the scientists and clinicians who will develop and apply future therapies in this rapidly emerging field.

Summary of Review

This application proposes the development of a small training program for pre-doctoral and post-doctoral trainees, with a focus on the application of high throughput screening methods to the study of stem cells. The proposal aims to train chemists to work specifically with stem cell biologists on interdisciplinary teams. The program integrates into a consortium with three other area institutions with the distinct emphasis of being the interface between chemistry and biology and the use of high-throughput methods to control stem cell differentiation and self-renewal. Notably, the institution has designated lab space, which is NIH-independent, for the derivation of new human embryonic stem cell lines. The application has a high scientific value but is deficient in the overall training component. The proposal outlines coursework requirements but offers no real description of the content. There is little mention of ethics and humanities training. The program director is a leading chemist with enormous administrative as well as scientific

experiences. With a large faculty of over 200 members, it is surprising that the application lists only six mentors to train 10 proposed training positions. However, the few proposed training faculty are experienced and ideally suited to mentorship in stem cell biology. The applicant pool is strong given the highly regarded graduate programs in chemistry and biology. However, the proposal did not offer much discussion of mentoring, a plan for training, or record of existing programs. As stated above, the ratio of trainees requested to the mentoring faculty is too high. In order to both take advantage of the greatest strengths of the local faculty and to promote diversity in approaches to stem cell biology, the recommendation is to fund a smaller number of trainees.

Overall Strengths and Weaknesses

The strength of this application is in the leadership of the program director and quality of the proposed mentors. It offers a unique opportunity to trainees in the application of high-throughput methods and small-molecule drug discovery technology to stem cell research. The weaknesses of this application are the inadequate construction of a formal training program and the small number of mentors for the trainee slots requested.

Recommendations

Meritorious and recommended for funding with reduction of trainee slots pending availability of funds.

	Pre	Post	Clinical	Total
Fellows Requested:	5	5	0	10
Fellows Recommended:	3	3	0	6

	Year 1	Total
Budget Requested:	\$ 583,000	\$ 1,765,500
Budget Recommended:	\$ 349,800	\$ 1,059,300